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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,625	02/11/2002	Joseph R. Lakowicz	70089.0003USU1	4325
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EXAMINER				
STAPLES, MARK				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/073,625

Applicant(s)

LAKOWICZ, JOSEPH R.

Examiner

Mark Staples

Art Unit

1637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28, 30-43, 45-56, 59, 61-67 and 70-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28, 30-43, 45-56, 59, 61-67 and 70-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's amendment of claim 28, 46, and 67 in the paper filed on 05/01/2008 is acknowledged.

Claims 28, 30-43, 45-56, 59, 61-67, and 70-82 are pending and at issue.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Rejections that are Withdrawn

Claim Rejections Withdrawn - 35 USC § 112 Second Paragraph

2. The rejections of claims 28, 30-43, 45-56, 59, 61-67, and 70-82 under 35 USC § 112 Second Paragraph are withdrawn in light of Applicant's removal of the word "moiety" from the base claims..

Claim Rejections Withdrawn - 35 USC § 102(b)

3. The rejection of claims 45-52, 59, 62-67, and 70-82 under 35 U.S.C. 102(b) as being anticipated by Natan et al. (1998) is withdrawn. Applicant's arguments with respect have been considered but are moot in view of the new ground(s) of rejection, necessitated by claim amendments.

4. The rejection of claim 28 under 35 U.S.C. 102(b) as being anticipated by Vo-Dinh (1995) is withdrawn. Applicant's arguments with respect have been considered but are moot in view of the new ground(s) of rejection, necessitated by claim amendments.

Claim Rejections Withdrawn - 35 USC § 103(a)

5. The rejection of claims 53-56 under 35 U.S.C. 103(a) as being unpatentable over Natan et al. as applied to claim 46 in further view of Lakowicz et al. is withdrawn.

Applicant's arguments with respect have been considered but are moot in view of the new ground(s) of rejection, necessitated by claim amendments. It is noted that Applicant is correct in Remarks that this was and should have been a rejection under 103(a) and was incorrectly listed as a 102(b) rejection in the previous Office action.

6. The rejection of claims 30-43 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vo-Dinh (1995), and further in view of Natan et al. (1998) is withdrawn. Applicant's arguments with respect have been considered but are moot in view of the new ground(s) of rejection, necessitated by claim amendments.

New Rejections Necessitated by Amendment

New Claim Rejections - 35 USC § 102

7. Claims 46-48, 52-56, 59, and 61-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Sokolov et al. (1998).

Regarding claims 46, 59, and 61, Sokolov et al. teach systems consisting test samples and a suspension of one or more metal particles, wherein said test sample comprises one or more biomolecules which are phospholipids (see Abstract) and immunoglobulins (see the section *Immunoglobulins* on p. 2904), wherein one or more metal particles and at least one of said one or more biomolecules in said sample are positioned at a distance apart sufficient to affect electromagnetic

radiation emission of at least one of said one or more biomolecules upon exposing said system to exciting electromagnetic radiation (see 1st and 2nd paragraph of body text on p. 3898),

wherein said one or more metal particles is a metal which is silver (see Abstract)

wherein each of said one or more biomolecules is individually a biomolecule selected from the group consisting of a protein which is an immunoglobulin (see the section *Immunoglobulins* on p. 2904) and a lipid which is a phospholipid (see Abstract).

Regarding claim 47, Sokolov et al. teach colloidal suspensions (see 5th sentence of 1st full paragraph on p. 3899).

Regarding claim 48, Sokolov et al. teach where the particles are coated with biological materials which can be an immunoglobulin (see the section *Immunoglobulins* on p. 2904) and a lipid which is a phospholipid (see Abstract).

Regarding claims 52-56, Sokolov et al. teach the binding of the lipid layer with the extrinsic fluorophore which is fluorescein to the colloidal silver particles affects the electromagnetic radiation emission by having a red shift effect (see last full paragraph on p. 3900).

Regarding claims 62 and 63, Sokolov et al. teach enhanced fluorescence emission (entire article, especially the Title and Abstract).

Regarding claim 64 and 66, Sokolov et al. teach electromagnetic radiation excitation wavelengths of 457.9 and 488.0 nm which are about 295 nm and are inherently multi-photon by being two wavelengths.

Regarding claim 65, Sokolov et al. teach electromagnetic radiation emission of 520 nm (see Figure 1).

New Claim Rejections - 35 USC § 103

8. Claims 28, 30-43, 45, 67, and 70-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vo-Dinh (1998) and Vo-Dinh et al. (2000).

Regarding claims 28, 37, 38, 46, 59, 61, 67, and 70, Vo-Dinh teach systems and compositions (entire article) consisting a test sample which can be a single-molecule (see 2nd sentence on p. 575) and one or more metal particles (throughout the article, see for example the 2nd full paragraph on p. 559) arranged on a solid glass or quartz support (see glass in quartz in Table 1),

wherein said test sample comprises one or more biomolecules by teaching biochemical analysis including for polynucleotide DNA (see last paragraph on p. 570) and biosensors for biological applications (see 3rd sentence of 2nd column on p. 580), and

wherein said one or more metal particles which can be the noble metal silver (entire article, e.g. the 3rd sentence of the 1st full paragraph on p. 566) and at least one of said one or more biomolecules in said test sample are positioned at a distance apart sufficient to affect intrinsic emission of electromagnetic radiation of at least one of said one or more biomolecules upon exposing said system to exciting electromagnetic radiation (see first 4 sentences on p. 564) and,

wherein an extrinsic fluorescent marker is not a part of the system as no extrinsic dye is introduced, and

Regarding claim 28, Vo-Dinh teaches biomolecules but do not specifically teach wherein each of said one or more biomolecules is individually a biomolecule selected from the group consisting of an amino acid, a peptide, a protein, a lipid and a sugar.

Regarding claim 30, Vo-Dinh teaches metal particles as islands (see section 3.3.1 on p. 566).

Regarding claim 31, Vo-Dinh teaches metal particles in the form of a coating on a substrate which is a type of film (entire article, especially the Abstract and Table 1).

Regarding claim 32, Vo-Dinh teaches and polymer nanospheres (see Table 1).

Regarding claims 32, 33, 48, 49, 75, and 76 Vo-Dinh teaches where metal particles are coated with titanium oxide or other oxides (see Table 1 and section 3.3.4).

Regarding claims 39, 50, and 71, Vo-Dinh teaches where the particles are subwavelength (see 1st paragraph on p. 576).

Regarding claims 41, 62, 63, and 77, Vo-Dinh teaches where the Raman spectroscopy is enhanced (see Title and throughout the article).

Regarding claims 42, 64, and 78, Vo-Dinh teaches a wavelength of 350 nm which about 295 nm (see Figure 2A).

Regarding claims 43, 65, and 79, Vo-Dinh teaches a wavelength of 520 nm (see Figure 2A).

Regarding claims 43, 66, and 82, Vo-Dinh teaches laser excitation which is multi-photon (see full paragraph on p. 571) and teaches multi-photon excitation by teaching incident photon tunnels (that is the plural, see 4th full paragraph on p. 564).

Regarding claim 28, Vo-Dinh et al. (2000) teach biosensors as given above (entire article) and teach the biosensors can be a system with a sample which is the protein (see 3rd sentence of text body on p. 366).

Regarding claim 34-36, 52, 73, 80, and 81, Vo-Dinh et al. (2000) teach where the first biomolecule is one strand of a DNA polynucleotide and the second biomolecule is the complementary strand of the DNA polynucleotide and where the first strand is affected by the binding of the second strand (see p. 541 and Figure 3B).

Regarding claims 40, 51, and 72, Vo-Dinh et al. (2000) teach where the distance is 36 Angstrom which is about 50 angstrom (see Figures 3A and 3B).

Regarding claims 47 and 74, Vo-Dinh et al. (2000) teach suspensions of colloidal gold particles (see 6th sentence of the 6th paragraph on p. 544).

Vo-Dinh teaches the claimed system including biosensors for biomolecule test samples but does not specifically teach the biomolecule which is protein. Vo-Dinh et al. (2000) teach biosensors for the biomolecule test sample which is protein. Because both Vo-Dinh and Vo-Dinh et al. (2000) teach biosensors for biomolecules, it would have been obvious to one skilled in the art to substitute the protein biomolecule in the biosensor as taught by Vo-Dinh et al. (2000) as the biomolecule in the biosensor as

taught by Vo-Dinh in order to achieve the predictable result of a system which is a biosensor for the biomolecule test sample which is protein.

Conclusion

9. No claim is free of the prior art.
10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Staples whose telephone number is (571) 272-9053. The examiner can normally be reached on Monday through Thursday, 9:00 a.m. to 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark Staples
/M. S./
Examiner, Art Unit 1637
August 23, 2008

/Kenneth R Horlick/
Primary Examiner, Art Unit 1637